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Constraints Faced by Farmers in Utilizing Rice Related Information through Rice Knowledge Management Portal (RKMP)

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ABSTRACT

Agriculture is a multifaceted enterprise comprising of millions of small and marginal farmers in India. Majority of Indian farmers are resource poor and illiterate, having tiny or no access to present-day contemporary technologies. Information, knowledge and technologies available to millions of rural families determine the success in agriculture and rural development. Rice Knowledge Management Portal (RKMP) is an initiative of Indian Institute of Rice Research (IIRR), Hyderabad, to cater to the information need of the stakeholders and provide a one-stop solution to all rice related information. The present investigation was undertaken with an objective to analyse the constraints faced by farmers in utilising the information available through RKMP. The results showed that farmer face technological, social and psychological constraints more severely. Among the technological constraints ; lack of updated information' was stood first (mean rank=6.388) in utilizing the information. Similarly, electricity problem (mean rank =5.350) and poor connectivity (mean rank =4.831) were also considered as limiting factors among farmers. In case of social constraints 'lack of access to women farmers' (mean rank =3.731) found to be the most limiting factor for using portal information. Similarly 'lack of institutional support' (mean rank =3.631) and 'less networking among farmers (mean rank =2.813) were also affected significantly. In case of psychological factors 'techno-phobia'(mean rank =2.219) was found most severe. Lack of motivation (mean rank =1.794) was least affecting to information management and delivery. Among economical constraints, cost of computer/smart phone (mean rank= 1.513) was affecting utilization of information provided by portal. The finding will be helpful in redesigning and modifications needed for reaching upto the grass root level for disseminating information and making portal more effective for farmers for timely and relevant information.

Key words: RKMP, constraints, technological, social, psychological, economical

INTRODUCTION

Knowledge is reflected as the fourth production aspect after labour, land and capital (AFAAS, 2011) and is predominantly precarious in the agrarian sector. Knowledge is power and makes an individual grow mentally and emotionally. Particularly in this current era of globalization, liberalization and privatization new opportunities and threats are rapidly emerging. Rural people through knowledge empowerment, have to enhance their ability to make a decision in this current situation. All agricultural extension and farmer-outreach programs face three major challenges *viz.* ensuring cost-effective outreach, designing solutions tailored to needs of individual farmers and cultivating an image that is farmer-friendly (khare *et al.,* 2011).There is growing demand for rapid input, service and information delivery among the farmers although, fulfillment of these demands solely by public extension system is limited (Mukherjee *et al.,* 2012). The wide farmer extension workers ratio *i.e.* 2879:1 (Mukherjee and Maity, 2015), administrative and bureaucratic workload and financial limitations etc. have made the public extension services more supply driven rather than demand driven (Sulaiman *et al.,* 2005). Agriculture requires generous knowledge transfer to and among farmers, together with information about fruitful agricultural practices, new expertise or controls of pest and disease eruptions, and new markets. ICTs can support directly farmers' access to timely and relevant information, as well as empower the conception and sharing of knowledge of the agricultural community themself. ICT is an emerging tool for achieving meaningful societal transformation (Meera *et al.,* 2004). ICT can play a critical role in profiting the resource-

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strapped farmers with updated knowledge and information on agricultural technologies, preeminent practices, markets, price trends, and weather situations. Agriculture Knowledge Management System is a platform enabling extraction, storage, retrieval, combination, transformation, visualization, investigation, dissemination and application of knowledge. The generation and application of agricultural knowledge is progressively more important, especially for small and marginal farmers, who need pertinent information in order to develop, sustain, and diversify their farm enterprises. In agriculture, technology mediated knowledge management appears to be advantageous factor to make the availability of relevant, contextualized, validated content in usable format and to barter the knowledge between those who can advance it and can use it. Different kinds of portals can be used in KM applications to enable various users to interact and establish relationships in order to identify, conceptualize and develop, utilize, apply and evaluate the information and knowledge for shared learning (Malekmohammadi, 2009). Agricultural portals are specially designed single access points to information collected from diverse sources related to crops and their entities. So in search of one stop solution for rice related problem RKMP was built. RKMP serves as an information highway for rice sector for farmers, researchers, extension professionals, policy makers, students *etc.* RKMP provides many specific queries for rice research and cultivation, such as queries related to variety selection, disease management, pest and site specific frequently asked questions (Das *et al.,* 2013). The vision is to realise higher productivity and production of rice through improved knowledge and skill sets. The efforts paved the way to reduce the gaps of the growing "digital information divide" specifically in the important cereal crop of the country namely the rice (Meera *et al.,* 2012). Whereas the lack of the exchange of knowledge among farmers, and those who produce farm-relevant knowledge, has often been regarded as a key challenge to agricultural development (Hartwich, 2007).The limiting factors faced while utilizing the rice related information by farmers were studied. An attempt was made to analyze the technological, Social, economical and psychological constraints that limits the knowledge management and delivery of information.

METHODOLOGY

The study was conducted in two purposively selected districts, Nalgonda of Telangana and West Godavari of Andhra Pradesh. The research locales were selected purposively, as the Project, RKMP has been implemented in these districts since its inception. These districts are predominantly rice cultivating districts throughout year. From each district 40 farmers were selected through simple random sampling technique for interview. Thus total 80 respondents were selected. The ex-post facto research design was used in the study, as the manifestation of the variables has already occurred and having no scope of any manipulation. Different categories of constraints were collected through literature review, expert opinion and farmers' perception. Data was collected using semi structured interview schedule. A three point continuum scale was used for getting the responses. The farmers' response were converted for one-way analysis of variance using a non-parametric test, Kruskal Wallis Test was used to determine the most important constraints among the four groups as perceived by farmers. To find out the most important constraint within each group, a two way analysis of variance using Friedman's test, a non-parametric test, was used.

RESULT AND DISCUSSION

A constraint is anything, that prevents or limits an individual or a group to utilize any resources or information or restrains them from tapping the intended effect of the information. Constraints can be of any type like personal or external in a social system. In this study the limiting factors faced by farmers while utilizing the rice related information analysed studied. An effort was made for analyzing these constraints namely, technological, social, economical and psychological that limits the knowledge management and delivery of information.

Technological constraints perceived by Farmers

Technological constraints were operationalized as those which limit the use of information due to its technological complexity and requirement for information and skill on utilising the rice related information. Eight different constraints on technological dimension were enlisted and farmers responses based on severity were collected. Friedman test was used to compare the constraints. The computed "p" value was less then significant at 1 per cent level. Technological constraints were having significant effect on the use of RKMP information and services. Among the constraints based on the mean of ranks value, the lack of updated information (mean rank=6.388), electricity supply problem (mean rank=5.350) and poor connectivity (mean rank=4.831) were the major important constraints that farmers were facing. The study was in consonance with findings of Singh *et al.* (2015) found that the most severe constraint in the functioning of mKRISHI was lack of update information followed by low IT literacy and low literacy. Dipankar *et. al.* (2006) found that lack of awareness, lack of access facilities, low ICT literacy to

use available information on the internet as the major constraints in ICT. Similar research findings of various researchers revealed that electricity supply problem and low network connectivity are the major constraints in the use of ICTs among the farmers (Chilimo, 2008; Ajani and Agwu, 2012; Sharma *et. al.,* 2012; Shankariah and Swamy, 2012 and Oyeyinka and Bello, 2013). Lack of training for use and application of portal (mean rank=3.813), low content quality (mean rank=3.775) and lack of relevant content in the portal (mean rank=3.725) were found to be least important problems for using and getting information. Vishwatej (2012) in his study reported that lack of adequate skill to use ICT was a constraint in effective utilization of ICT based project by farmers. Babu *et al.,* (2012) found that the major constraints to information access is poor availability, poor reliability, lack of awareness of information sources available among farmers and untimely provision of information. Ogbonna *et al.,* (2013) found that farmer faced frequent power failure, lack of necessary skills and poor ICT training problems had limited their access to agricultural information and hence recommended the need for providing necessary ICT facilities, training and infrastructure needed for effective communication in the rural areas. (Table 1).

Table 1: Technological constraints perceived by farmers

Statements	Frequency	Sum of ranks	Mean of ranks	Groups		
Lack of relevant content in the portal	80	298.00	3.73	A		
Poor quality content	80	302.00	3.78	A		
Lack of training in handling ICT tools	80	305.00	3.81	A		
Too many steps to get information	80	307.00	3.84	A		
Non availability of computers	80	342.50	4.28	A	B	
Poor connectivity	80	386.50	4.83	A	B	
Electricity supply problem	80	428.00	5.40		B	C
Lack of updated information	80	511.00	6.40			C

Test Statistics of Friedman test	
N	80
Chi-Square	132.907
Df	7
Asymp. Sig.	<.001

Social constraints perceived by farmers

Various constraints were enlisted, compared and tested using Friedman statistics and explained high level of significance on "p" value. In case of social constraints, lack of access to women farmers (mean rank=3.731) was found to be the major constraint followed by lack of institutional support (mean rank =3.631). The finding also supported by Gupta *et al.* (2000) found that there are many barriers which affect knowledge management. Adejo *et al.* (2013) who found that women farmers had less access to use ICT tools. These barriers include cultural differences and language, time-consuming nature of regular activities, resistance to change and people's reticence to share knowledge. Other constraints as like less networking among farmers (2.813) was also a major factor which limits the use of information, lack of coordination from trained people (mean rank=2.763) and lack of acceptability for internet information (2.063) were found to be the other significant constraints (Table 2). As the p-value is less than 0.001 it is very clear from the table that social constraints are statistically significantly different from each other.

Table 2: Social constraints perceived by farmers

Statements	Frequency	Sum of ranks	Mean of ranks	Groups		
Lack of confidence in internet information	80	165.00	2.10	A		
Lack of coordination from trained people	80	221.00	2.76		B	
Less networking among farmers	80	225.00	2.81		B	
Lack of institutional support	80	290.50	3.63			C
Lack of access to women farmers	80	298.50	3.73			C

Test Statistics of Friedman test	
N	80
Chi-Square	98.336
Df	4
Asymp. Sig.	<.001

Psychological constraints perceived by farmers

Various psychological constraints were listed and analyzed using Friedman test. Techno phobia (mean rank=2.219) was found to be most severe to use RKMP information. Similarly fear of failure regarding using the information (1.988) and lack of motivation (1.794) were the significant constraints faced by the farmers (Table 3). Ogbonna *et. al.* (2013) found that farmers had fear that things will go wrong in the use of ICT.

The Table 3 clearly indicates that psychological constraints are statistically significantly different from each other. This result was similar to the finding of Balakrishnan *et. al.* (2012) and and Afroz *et. al.* (2013).

Table 3: Psychological constraints perceived by farmers

Statements	Frequency	Sum of ranks	Mean of ranks	Groups
Lack of motivation	80	143.50	1.80	A
Fear of failure	80	159.00	2.00	A B
Techno-phobia	80	177.50	2.22	B

Test Statistics of friedman test	
N	80
Chi-Square	10.584
Df	2
Asymp. Sig.	<.005

Economic constraints perceived by farmers

It can be inferred from Table 4 that cost of Computer/laptop/smart phone (mean rank=1.513) for availing e- connectivity was perceived to be the most severe economic constraint perceived by the farmers. Ogbonna *et al.* (2013) found that farmers face problem of high cost of ICT infrastructure for getting information. Similar result was found by Ahmed *et al.* (2008) indicated that high cost was the major constraints in using computer and other ICT tools.

Whereas high cost of internet (mean rank=1.488) was limiting the use of information provided by RKMP Here the two constraints were got the same grouping letter. Hence it can be concluded that these two sets of constraints were perceived to be significant by the farmers. (Table 4). As the p-value is low it is explicit that the two aspects of economic constraints are not significantly different from each other.

Table 4: Economic constraints perceived by farmers

Statements	Frequency	Sum of ranks	Mean of ranks	Groups
High cost of internet connection	80	119.00	1.49	A
Cost of computer/smart phone	80	121.00	1.51	A

Test statistic value and its significance is given below

Test Statistics of friedman test	
N	80
Chi-Square	.080
Df	1
Asymp. Sig.	.777

It can be seen from the Table 5 that the mean rank corresponding to Technological Constraints is more and therefore it was the major constraint to the use of information provided by RKMP and was not on par with any other constraints. Hence it can be concluded that technological constraint was perceived to be most severe and significant by the farmers. Social constraints and economical constraints were moderately severe and psychological constraints had less significance as constraints RKMP information users.

Table 5: Comparison of different constraints based on mean of ranks as per kruskal wallis test

Constraints	Frequency	Mean of ranks	Groups
Psychological	80	102.50	A
Social	80	165.23	B
Economical	80	174.40	B
Technological	80	199.90	B

Test statistic value and its significance is given below

Kruskal-Wallis test:	
K (Observed value)	48.993
K (Critical value)	7.815
Df	3
p-value (Two-tailed)	< 0.0001
Alpha	0.05

CONCLUSION

In the present study it was found that farmers faced technological constraints like lack of updated information, electricity problem and poor connectivity to utilizing the information of the portal. To overcome these constraints RKMP needs to update information regularly and then proper infrastructure availability is needed at farmer's level. Women farmers' faced constraints like lack of access to information which limits the use of portal information. To overcome these constraints, women should be provided with the available ICT tools. Similarly, lack of training support and less networking among farmers also affect the information utilization by farmers, proper training and women friendly technologies should be developed. In the study, some psychological constraints like fear of technology in using information form online sources were found as most severe. Similarly, lack of motivation also affects information management and use of information. Farmers should be motivated to use the modern technologies for accessing information.

For accessing information from portal, infrastructure availability is needed, some economical constraints like cost of computer/smart phone was found to be a limiting factor in utilizing information provided by portal. To overcome these constraints a low cost technology in the form of RKMP mobile app can be provided through which. all information of rice can be accessed. For effective dissemination of information it should be linked with state department to use this information for better sharing and utilizing portal resources effectively. RKMP needs to be promoted all over the country more intensively. The finding will be helpful in redesigning and modifications needed for disseminating information through portal and making portal more effective to reach the farmers at grass root level for farmers for timely and relevant information.

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